

W5YI

America's Oldest Ham Radio Newsletter

REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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In This Issue...

Ham Restructuring Opinions Mixed
Dealers Sell Out of Study Manuals
Technician Exam Credit Confusion
New Question Pools Ready Feb. 1
Amateur Call Signs Issued to Jan. 1
New and Upgrading Radioamateurs
Microsoft to Release Win2K in Feb.
Wal-Mart, K-Mart to Become ISPs
Presidential Campaign & Taxing Web
FDA Cracks down on Internet Drugs
Wanna Buy a Used UHF TV Channel?
End of Year Ham Radio Op Census
UK Ham Ops to Link Over Internet

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New Ham Rules Causing Anger, Excitement ...and Confusion!

Word is quickly getting around the amateur community about the FCC's decision in *WT Docket No. 98-143* to restructure the Amateur Service. Our telephone has been literally ringing off the hook since December 30 when the FCC announced the new amateur line up ...and our e-mailbox quickly filled with comments, criticisms and questions.

Most of them have to do with how the new Rules affect the person calling. They fall into four categories. Those who totally oppose the new Amateur Service structure and Rules, those who think they are "great", those who are confused ...and amateurs who need help so they can take advantage of them.

We are getting far more inquiries from Technician Class amateurs than anyone else. They do not want to lose their credit for the new General Class or the 5 wpm code exam. And they especially want to know how to prove that they passed the requisite examinations. I have fielded dozens of questions on that subject!

Long term Extra Class amateurs are generally dissatisfied (or furious) with the *Report and Order*. They say it "waters down" their privileges that they worked hard to achieve, that a top code speed of 5 words-per-minute represents a "dumbing down" or reduction in the standards and that the HF bands will be congested with less than desirable operators. They blame the ARRL and their "economic needs" for allowing it to happen. Actually the League had

little to do with the ultimate decision. It was the VECs plan that the Commission adopted.

The rush is on for training materials!

But most other licensees – especially those radioamateurs holding Tech Plus and Advanced Class licenses – are thrilled with the Commission's restructuring decision. It means they will not have to pass a high speed code exam. It appears that the high speed telegraphy examinations is indeed a very real barrier to achieving the higher class licenses and that we are going to see thousands of new General and Extra Class operators now that 5 wpm is the top telegraphy speed.

The FCC agreed that all licensees needed to pass the appropriate written examinations rather than being automatically upgraded to the next higher level as the ARRL had wanted. The Novice, Tech Plus and Advanced class licenses will not be continued after April 15th but will remain in the FCC database and may be renewed indefinitely.

These licensees relish the idea of being able to pass the existing 30 question (Element 3B) or 40 question (Element 4B) multiple choice examination prior to April 15 and getting CSCE (*Certificate of Successful Completion of Examination*) credit which they can trade in on or after April 15th for a General or Extra Class ticket without more Morse code.

Since the highest code speed in ham radio goes to 5 wpm effective April 15, they become

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #2

February 1, 2000

eligible to upgrade by merely appearing at a VE session, paying the \$6.65 application fee and upgrading without further examination. It has caused a tremendous "run" on General and especially Extra Class training materials.

All of the major distributors of training manuals are running out of study guides. A check of the major publishers on January 15th - Gordon West, Ameco and ARRL among them - revealed that all had sold out of Extra Class materials. General Class manuals still seem to be available in the marketplace.

The Advanced Class study materials are not selling as well since a General Class amateur would have to pass both the current 50 question Element 4A and 40 question Element 4B before April 15th to qualify for Extra on or after April 15th without further examination. It appears most General class amateurs are waiting for the new 50 question Extra Class exam.

Amateur license classes over the years

The current Amateur Service licensing process had its origin in what came to be known as the *Incentive Licensing Program* adopted on August 24, 1967. (Docket No. 15928.) Prior to 1967, there were four license classes: Novice, Technician, General and Extra Class which were obtained by passing combinations of three written examinations and three Morse code examinations.

The Novice license was created in 1951 with a code speed requirement of 5 words-per-minute. The objective of incentive licensing was to award additional frequency privileges in exchange for increased telegraphy skill and electronics knowledge.

The *Incentive Licensing Program* re-established the Advanced Class license which had not been available for the previous 15 years. As a result, Element 4 was subdivided into Element 4(A) - the intermediate written examination for the Advanced Class and 4(B) - the advanced written examination for the Amateur Extra Class. The Amateur Service now had five license classes, 4 written examinations and 3 code examinations.

In 1979, the international Amateur Service regulations were amended to permit administrations to waive the manual Morse proficiency requirement for "...stations making use exclusively of frequencies above 30 MHz."

Effective March 21, 1987, the concept of Novice Enhancement (*PR Docket No. 86-161*) came into being. Novices would now be permitted to operate on the 222-MHz and 1270 MHz bands at reduced power and the subband on 10 meters for Novices and Technicians was enlarged to 28.1-28.5 MHz (CW) and 28.3 to 28.5 MHz (CW and SSB.)

Written Element 2 was increased from 20 to 30 questions and the 50 question written Element 3 was split into two parts with the Technician (VHF oriented) questions being placed into an Element 3(A) pool and the General (HF oriented) questions into an Element 3(B) pool.

The number of Amateur Service examinations were now increased to eight. Five different license classes could now be obtained by passing combinations of five written and three telegraphy examinations.

Amateurs who had passed the old Element 3 prior to March 21, 1987, therefore had been examined on HF rules, electronics and procedures and were granted examination credit toward the General Class. It has been that way ever since.

In 1990, the 5 wpm telegraphy requirement was eliminated from the Technician Class and new holders were permitted to operate on all Amateur spectrum above 30 MHz effective with examinations administered February 14, 1991. (*Codeless Technician, PR Docket 90-55*)

No Code Technician Class amateurs who demonstrated telegraphy proficiency at five words-per-minute, however, were permitted to operate on the Novice subbands under the authority of their VE-issued CSCE. They were not to be issued another license. And as part of the Codeless Technician R&O, the VECs took on the responsibility of keeping track of Technician Class operators who passed a Morse code exam.

This so-called "Tech Plus" database was handled by one of the VEC organizations. Don Tunstall WB4HOK and his associate, Frank Emens W4HFU of Huntsville, Alabama sent periodic Tech Plus database status reports to the FCC in Washington, DC. The FCC issued a Technician license to those who also had 5 wpm code credit up until June 1994 - a period of more than three years.

Then something strange happened! The July 1994 *Amateur Census Report* from the FCC in Gettysburg, PA began showing statistics and licenses on a new class of license they called "Tech Plus." The VECs (and apparently the FCC in Washington, DC) were of the opinion that the VECs would be keeping this database indefinitely and that only five amateur licenses would be issued. Now here was a sixth Amateur license that never went through rulemaking. It just "appeared."

Technician Class causes the most confusion

Using the "Tech Plus" database that the VECs were maintaining, the FCC in Gettysburg updated their complete database to show all Technician amateurs who had passed a code test. The VECs then discontinued maintaining the "passed 5 wpm" database and the FCC took over the record keeping. One of the problems was, however, even though the FCC updated the database, they never went back and reissued these earlier "Technicians with code credit" new Tech Plus licenses.

It caused the volunteer-examiners somewhat of a problem because some Technicians used CSCE's to prove they were a Tech Plus licensee while others had Tech Plus licenses. Some (and perhaps most) of the Technicians who passed 5 wpm apparently have lost their CSCE credit certificate and rely on the FCC database to

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #3

February 1, 2000

prove that they have passed 5 wpm. But it still causes some confusion at exam sessions. And many VEs (there are more than 35,000 of them) are not aware of all the peculiarities and history of Technician Class exam credit.

The bottom line is that due to changes over the past decade in the Amateur Service examination and licensing structure, it has become exceedingly difficult for volunteer examiners to determine which examinations an applicant has passed and therefore receives examination credit.

For example: an applicant who *examined* for a Technician license on or before March 21, 1987, receives credit for Element 1(A), 2, 3(A) and 3(B) -- 5 wpm code plus the Novice, Technician and General Class written exams. We call them "Old Techs."

Technicians who *passed* their examinations between March 22, 1987 and February 13, 1991 do not receive credit for Element 3(B.) They get exam credit for Elements 1(A), 2 and 3(A). (Classic Techs.)

A Technician licensee *examined* on or after February 14, 1991 receives only credit for Element 2 and 3(A). A Technician Plus licensee is a Technician who has passed Element 1(A), the 5 wpm code examination. He may or may not, however, have an actual Tech Plus license document. Note that we use the word "examined" rather than "licensed" and there is a reason for that which we will discuss later.

Since 1987, we have had four different versions of the Technician license and each is accorded different examination credit. And it is causing a lot of confusion among Technician Class licensees, volunteer examiners and VECs.

Exam credit arrangement for Technicians.

Effective April 15, 2000 the so-called "**Old Techs**" *theoretically* licensed prior to March 21, 1987 are fully qualified for the new General Class without further examination. That is because up until March 21, 1987 all Technicians had to pass 5 wpm code and took the old Element 3 which contained General Class questions. These applicants may NOT mail their application directly to a VEC or FCC for upgrade, instead they must submit their application to a local VE exam, obtain 3 VE signatures and pay the \$6.65 application fee.

Effective April 15, 2000 the so-called "**Classic Techs**" those Technicians examined between March 21, 1987 and February 14, 1991 get credit for current Element 1A (the new Element 1) and Element 3(A). They may take Element 3(B) -- the current General exam -- up until April 14th which will not result in an upgrade. But they can hold the CSCE for 3(B) until or after April 15th for upgrade to the new General Class.

They will not be administered a code exam since the new telegraphy requirement effective April 15, 2000 is 5 wpm -- which these applicants have already passed.

They must submit another *NCVEC Form 605* application, pay the \$6.65 application fee and give the CSCE for 3B to the VE team. They will not need to take an examination.

Some applicants (and VE teams) want their VEC to automatically file their upgrades with the FCC after April 15th rather than have to go back to another VE session. But the FCC wants a second application filed and the upgrade certified by three VEs.

Effective April 15, 2000 the so-called "**Codeless Techs**" -- those Technicians examined after February 14, 1991 -- get credit for current Element 2 (Novice written exam) and Element 3(A) (Technician exam). On or after April 15, 2000 they will be granted exam credit for Element 2.

If these amateurs pass 5 wpm code and Element 3(B) (the current General exam) prior to April 15, 2000 they will be immediately upgraded to Tech Plus and may use their Element 3B CSCE on or after April 15 to obtain a General Class license. They will have to submit another application to a local VE team, obtain 3 VE signatures and pay another application fee to go from Tech Plus to General.

Codeless Techs also may take the current Element 3(B) and receive a CSCE for use as Element 3 exam credit on or after April 15th. This 3B CSCE may be used as Element 3 exam credit for one year during which time they must pass the 5 wpm code. They will then be eligible to obtain a General Class ticket.

Effective April 15, 2000 an applicant passing the new Element 2 exam qualifies for the new (**Restructured**) **Technician** license ...another variation with different handling! The exam will be a 35 question multiple choice test (instead of the current 30) and will be based on a new question pool. Applicants who pass the 5 wpm code exam will not become a Tech Plus operator, but will have Tech Plus privileges (i.e. CW privileges on the 80, 40, and 150 meter bands and both CW and SSB privileges on the 10 meter band) for up to one year. (See new Section 97.301.)

The 5 wpm CSCE will expire in 365 days (as per Section 97.97.505(6)) from the date the telegraphy exam is passed. If examinees do not pass the new Element 3 (General Class) examination during this period, they will have to retake the 5 wpm code exam. Technician Plus operators (those Techs who have passed a code exam prior to April 14th) will retain their code credit indefinitely.

A note to volunteer examiners: You must check the date on the Technician examinee's CSCE. If the applicant is a Tech plus operator (that is a Technician who passed the code exam on April 14, 2000 or before) the examinee receives credit for the 5 wpm code indefinitely. A code exam CSCE dated on or after April 15, 2000, is valid only for 365 days.

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #4

February 1, 2000

Another wrinkle to consider

The March 21, 1987 and February 14, 1991 dates are really not absolute. This is because there is a decided lag between the date when an applicant is examined and the date of the license document or grant. The new (and previous) rules refer to "...license documents granted before March 21, 1987 and February 14, 1991." It would have been better to refer to examination dates rather than licensing dates.

For example: the first Codeless Technician license was not actually issued until March 12th and all examinees with licenses dated February 14 to March 11 also passed a code exam administered before February 14th. These applicants have let us know in no uncertain terms that they do not want to lose their 5 wpm code credit.

The honor of being the first No-Code Technician goes to Robert N. Williams N3IFY of Annapolis, Maryland! The difference between the February 14, 1991 implementation date and March 12th represents the time that it took for the VE team to get the paperwork to the VEC ...the VEC to process the test session and forward it to the FCC ...and the FCC to issue the license. So all Technician Class licenses issued on or before March 12th, 1991 (rather than February 14th) also receive credit for the 5 wpm. It is not what the rules say, however.

Follows is a list of the first Codeless Technician call signs issued by district: N0NBZ, N1INQ, N2LVH, N3IFY, KC4WOG, N5SGK, KC6SKF, N7QLR, N8NNL and N9KRA. They might prove useful in determining if an applicant has passed 5 wpm since all station call signs are issued in strict sequence. All callsigns before these should get credit for 5 wpm code.

Note: The 2x3 callsigns in the 4th and 6th call district were issued after all N4 and N6 callsigns were allocated. For example, a Technician Class amateur with the call sign KB6AAA would have passed 5 wpm since the FCC began issuing the 1x3 "N" calls to Technician (and General) Class amateurs and when they were all assigned, went to the next lowest callsign group: those beginning with KA6, then KB6 and up to KC6SKF. The only deviation from this would be call signs obtained under the Vanity Call Sign System and very, very few "N" calls (since all are assigned) and 2x3 vanity calls have been issued.

There was even a longer lag period after March 21, 1987. We have heard from applicants who say they passed the old Element 3 and that their licenses are dated "months" after March 21st. We have been unable to come up with a license grant date reflecting the administration of the first "separated" Element 3(A) and 3(B) examinations ...but we believe it to be around July 1987.

Richard Fisher N9HQJ of Orea, Illinois is one of the many who called us wanting to know why he should not be authorized a General Class license after April 15th on the basis that they took the old Element 3 prior to March 21, 1987. Fisher's license shows an issue date of

July 21, 1987 - four months after March 21, 1987!

Is that possible? Yes, it really is. We have had many reports that it took the FCC that long back then to get out ham tickets. So even if an "Old Tech" did retain his license (as Richard Fisher did) it still doesn't grant him credit according to rules. VEs have to be made aware of this.

All of this makes it extremely difficult for VEs and VECs to accurately determine what examination credit some examinees have earned. It would be easy if all applicants retained their CSCEs, but after nine (or thirteen) years few amateurs seem to have them. And VECs do not retain their examination records that long. So the VEs and VECs will just have to do the best they can.

We asked the FCC if VEs and VECs could use other means to determine examination credit other than the old license or CSCE they mentioned. We were informed that the key word in the *Report and Order* was the word "usually" (in footnote No. 77) ...and that other means may also be used - such as an old callbook or database - if the VEC has confidence in its accuracy.

Be aware that beginning April 15th, all Technician Plus Class licenses will be renewed as "Technician" but with 5 wpm code credit that will not expire. The number of Tech Plus radioamateurs in the FCC database will constantly shrink as they get renewed as Technician.

Question Pool Committee swings into action!

For the first time, the FCC is allowing the VEC's Question Pool Committee (QPC) to determine the appropriate mix of questions in the various written examinations. A new set of question pools will be released to the public on February 1, 2000. They must be used in all examinations administered on and after April 15, 2000.

It is a very tight schedule, but the QPC (made up of Ray Adams W4CPA, Fred Maia W5YI, Bart Jahnke W9JJ and Scotty Neustadter W4VWW) have been meeting by telephone conference call and e-mail in an effort to consolidate, revise and develop the new questions needed for the three remaining (Technician, General and Extra Class) question pools.

The new Element 2 (Technician) and Element 3 (General) examination will consist of 35 questions - each selected from a pool of about 400 questions. They will be more oriented toward Rules, operating procedures and safety. The Extra Class (Element 4) exam will consist of 50 questions drawn from a pool of about 600 questions with emphasis on the technical side of the hobby.

The new Technician question pool will be drawn from VHF/UHF oriented questions in Element 3A plus some questions from the current Novice (Element 2) pool. The Amateur Extra test will combine portions of the current Advanced (Element 4A) and Amateur Extra (Element 4B) examinations. Only minor changes are anticipated in the new General class examination which will be based on the existing Element 3(B).

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #5

February 1, 2000

AMATEUR RADIO STATION CALL SIGNS

...sequentially issued as of the first of January 2000:

| Radio District | Group A Extra | Group B Advanced | Group C Tech/Gen. | Group D Novice |
|----------------|---------------|------------------|-------------------|----------------|
| 0 (*) | AB0JS | KI0RI | (***) | KC0HBA |
| 1 (*) | AA1UU | KE1LW | (***) | KB1ETE |
| 2 (*) | AB2GV | KG2RG | (***) | KC2FVE |
| 3 (*) | AA3TC | KF3DR | (***) | KB3ENS |
| 4 (*) | AF4QQ | KV4DP | (***) | KG4FXG |
| 5 (*) | AC5TP | KM5WQ | (***) | KD5IYO |
| 6 (*) | AD6JS | KR6DS | (***) | KF6ZXJ |
| 7 (*) | AC7BU | KK7VJ | (***) | KD7HOX |
| 8 (*) | AB8ER | KI8JJ | (***) | KC8NQJ |
| 9 (*) | AA9XM | KG9QK | (***) | KB9VQK |
| N. Mariana | NH0P | AH0BB | KH0IK | WH0ABJ |
| Guam | (**) | AH2DN | KH2UU | WH2ANX |
| Hawaii | WH7N | AH6PZ | KH7YZ | WH6DGC |
| Am.Samoa | AH8R | AH8AH | KH8DO | WH8ABF |
| Alaska | AL0R | AL7RP | KL0VM | WL7CVD |
| Virgin Isl. | (**) | KP2CP | NP2KR | WP2AIN |
| Puerto Rico | WP3F | KP3BL | WP3FN | WP4NOT |

* = All 1-by-2 & 2-by-1 call signs have been assigned.

** = All 2-by-1 call signs have been assigned.

*** = Group "C" (N-by-3) call signs have now run out in all districts. Group "D" calls now being assigned.

Note: New prefix numerals now being assigned in Puerto Rico (KP3/NP3/WP3), Hawaii (AH7/KH7/WH7) and Alaska (AL0/KL0)

[Source: FCC Amateur Service Database, Washington, DC]

NEW AND UPGRADING AMATEUR STATISTICS

For the Month of December 1997, 1998 & 1999

| License Class | New Amateurs | | | Upgrading Amateurs | | |
|---------------|--------------|-------------|-------------|--------------------|------------|-------------|
| | 1997 | 1998 | 1999 | 1997 | 1998 | 1999 |
| Novice | 70 | 65 | 59 | 0 | 0 | 0 |
| Technician | 1057 | 1309 | 1290 | 0 | 0 | 0 |
| Tech Plus | 133 | 142 | 151 | 293 | 312 | 527 |
| General | 23 | 24 | 17 | 282 | 240 | 156 |
| Advanced | 8 | 9 | 3 | 228 | 196 | 225 |
| Extra Class | 3 | 3 | 1 | 172 | 145 | 246 |
| Total: | 1294 | 1552 | 1521 | 975 | 827 | 1154 |
| Decrease: | (40%) | +20% | (2%) | (19%) | (8%) | +40% |

AMATEUR RADIO ENFORCEMENT NEWS

The FCC has ordered Harvey C. Friedman N2PLI of Atlantic Beach, NY, Anthony J. Barben, Jr. N2WNF of Brooklyn, NY, Michael R. Wlazlo N2SVT of New York City and Jason Cohen KB2TYP of Oceanside, NY to retake their Technician Class examination Elements 2 and 3A. Paul F. Waldman N2RJO of the Bronx, NY must retake all license exams up to and including the Advanced Class. All must take the examinations under the supervision of the FCC Field Office in New York City.

Anna M. Torrellas, AB2AG of Yonkers, NY and Carlos E. Rodriguez KP4AB of Rio Pedras, PR 00926 had their Extra Class licenses cancelled for failing to appear at the FCC Office in San Juan, PR for retesting.

Charles T. Mclees, Jr. KG4AXY of Greensboro, NC has had his Technician Class license "set aside" and his application reverts to pending status. FCC's Riley Hollingsworth said monitoring information indicates Mclees operated during December 1999 on the 160 meter band (1.998 MHz), a frequency not allocated to Technician licensees. He has been given 20 days to explain.

The license renewal of Jeffrey J. Pipenur WA8IKW of Vandolia, OH was also "set aside" due to monitoring evidence of deliberate and malicious interference to other Amateur stations on 3.865 MHz during April and November 1999 "...including broadcasting, harassing other operators, profanity/obscenity, poor Amateur practice and operation contrary to the basis and purpose of Amateur Radio..." Pipenur's response will be used to determine if his license should be renewed.

Frederick J. Roll NU5M (Extra Class) of Seagoville, TX has been forwarded a November 13th tape recording of communications between his station and that of KC1ZQ. Riley Hollingsworth wants to know "...how the transmissions comply with the basis and purpose of the ...Amateur Radio Service..." Roll was cautioned "...that such transmissions degrade the Amateur Radio Service for legitimate users and will not be tolerated." His WJ5B call sign request was also set aside.

Fernando Suero N2WSC of Jamaica, NY was warned that the FCC has monitoring evidence that he has been deliberately and maliciously interfering with VHF repeater operations in his area. "...further incidence will result in a monetary forfeiture ...and [license] revocation."

The FCC warned Arthur Visser W9ART of South Bend, IN that it had received numerous complaints of malicious interference and jamming - confirmed by FCC monitoring - apparently originating from his station on 3.950 MHz. Additional instances will result in a revocation hearing before an Administrative Law Judge. "We caution you that failure to operate your station in accordance with Commission rules will result in the loss of your license."

Michael D. Adams, AE4FB of Doraville, GA has been cited by the FCC for alleged deliberate interference to an Amateur Radio Emergency Service Y2K Standby Net operating during the evening of December 31, 1999 on 3.878 MHz. He has been ordered to respond to the allegations.

Israel Acevedo ex-KG4BFQ of Dennelton, FL was cited for operating on 20 and 15 meters using the call sign KG4YET, a call sign not assigned to him. His license was cancelled on July 6, 1999 for failing to appear for reexamination.

William J. Browning AF4PJ of Pendleton, SC was asked respond to questionable VE signatures on an examination session he held in Clemson, SC on July 14, 1999.

Gary L. Hattaway KC4DRA of Charlotte, NC was warned that he was observed operating on the 70 cm (440 MHz) - a band that his Novice license does not authorize.

CUTTING EDGE TECHNOLOGY

■ **Ultra short range wireless networking** – A new technology operating in the 2.4-GHz range provides short range (up to 30 feet) communications between devices such as personal computers, cellular phones, portable digital assistants, and digital cameras without the use of cables. The concept was originally conceived at Ericsson (Stockholm, Sweden), and it is being promoted by such industry giants as 3Com, Ericsson, IBM, Intel, Lucent Technologies, Microsoft, Motorola, Nokia, and Toshiba.

■ **Today's most complex integrated circuits contain pin counts approaching 600.** Semiconductor manufacturers say that we could see pin counts reaching the 5,000 mark within seven years.

■ **Many hams know that just because an electronic device is turned off from its power switch, the AC transformer (the black cube known as a "wall wart") still draws current from the power line if it's still plugged in.** That's current you must pay for, even if you're not using the device it's supposed to run. The same holds true for today's TV sets and VCRs. They all consume electricity when not being used because they operate in a "standby" or "sleep" mode. Some studies suggest that the annual cost of this wasted electricity approaches \$1 billion.

The Environmental Protection Agency has set up power requirements for manufacturers of consumer electronic products, encouraging them to design TVs and VCRs to use less than four watts. European cell-phone manufacturers may soon be required to produce battery chargers that use less than 0.2W when no batteries are in place. Better still, unplug them. It saves money and provides the best surge protection possible.

■ **A novel way to find tiny cracks in fiber-optic cables involves freezing the cables with liquid nitrogen.** An optical time-domain reflectometer normally can't pinpoint a mild fault very accurately, but freezing the cable narrows down the error range to within a few feet. An Australian company called Kingfisher simplifies this process with a device called the Cold Clamp, which, when applied to the cable, temporarily freezes a specific area. This magnifies the fault to the point where it can be more accurately located with test

equipment. It doesn't hurt the cable and simplifies the troubleshooting process.

■ **One of the most popular micro-processors in history is the Z80, made by Zilog.** It was first manufactured in the late 1970's and remains a favorite in thousands of professional and hobby applications. Its current descendant, the Zilog eZ80, retains software compatibility but also offers a wealth of more powerful tools. It can access thousands of times more memory, it incorporates built-in digital signal-processing capabilities, and even offers easier digital data management for handling Internet data.

■ **The newest professional video cameras are not only sharper and more reliable than their predecessors,** they can also produce visual effects not previously possible. For instance, micro-processors built into the cameras drive the lens servos, controlling both focus and zoom. In the past, it was often difficult or impossible to adjust both features simultaneously in a very short time. Today, however, both features can be adjusted "on the fly," controlling focusing, field of view, f-stop, and zoom, without sacrificing image quality. Settings can be memorized and stored in computer memory, so changing scenes is no more difficult than pressing a button.

■ **The Home Shopping Network is incorporating a voice-recognition system for their telephone networks.** Regular customers may fall victim to credit card thieves, who call and fraudulently order large amounts of merchandise. The computer-based voice-verification system lets HSN verify their customers' identities through a voiceprint.

■ **If you're spending a lot of time trying to sort out individual wires in a cable trunk,** the A-Bug Model 140 tone probe by Industrial Technology may be just the tool for you. The handheld device uses a capacitance sensor to pick up a specific tone sent through a particular wire. When it finds the "live" wire, it turns on an LED as well as a speaker.

■ **If your next project on the bench is past the prototype stage but still needs a little rewiring,** perhaps a Correct-A-Chip adapter by Aries Electronics can help. When working with DIP sockets used on TTL and CMOS chips, it's easy to miswire the individual pins. Rather than remove, restrip, and resolder, the Correct-A-Chip adapter simply plugs into

the top of the socket and provides you with lines of fresh solder pads. You can rewire the individual pads, then plug the integrated circuit on top of that. Other chip packages can make use of this technique PLCC, PGA and BGA.

■ **Ever wonder why most heat sinks in electronic systems have such rough surfaces?** Blame it on thermodynamics. It's easier to get rid of unwanted heat when the surface is serrated, rather than when it's smooth and flat. "Notching" the aluminum gets rid of heat faster without having to make the heat sink physically larger.

■ **Newer biometric devices are scanning more than one finger per person for identification purposes.** Rather than rely on a single digit, they ask for at least two fingers to be digitally scanned. They may also include a retina scan. Since people can and do get injured, this prevents approved patrons from being denied access to sensitive areas simply because the reader couldn't identify their fingerprints because of finger injuries.

■ **If you're using a ground rod that's embedded in concrete, bear in mind that it may not be as well grounded as it once was.** The electrical resistance of concrete varies with its moisture content. Long periods of drought may increase the resistance between the concrete and the surrounding soil. Fresh concrete has more water within it than old concrete does.

EMERGING COMMUNICATIONS

■ **Now that Congress is allowing satellite-TV providers to carry local stations, DBS companies are already offering local ABC, CBS, NBC, FOX and PBS channels in the top 20 markets.** Both market leaders DirecTV <www.direcTV.com> and EchoStar <www.dishnetwork.com> have narrowed the programming and price gap between cable and satellite-delivered television by offering basic equipment specials (as low as \$100) and monthly rates as low as \$30.00. Plan on paying another \$5 a month for the local lineup.

But areas away from the major markets won't be seeing local channels anytime soon since satellites have limited capacity.

■ **How many e-mail messages do**

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #7

February 1, 2000

you get daily? Expect that number to increase. With e-commerce, and more people exchanging messages on line, it's expected that Internet users worldwide will receive over 450 trillion e-mail messages by 2003!

■ **You may not want to tinker with a modern home satellite TV system.**

The ultra-high bandwidth of the satellite signal (1.8 GHz) means that cheap, junk-box coax cable just won't cut it. It has to be shielded, and shielded well. In fact, some cable companies won't use anything less than four-layer shielded RG-6 coax cable.

■ **Very few radio stations employ full-time engineers these days,** because the transmitter equipment is much more dependable than it used to be. A freelance consultant can take care of a whole flock of stations individually as problems come up. But it's getting harder to find good broadcast engineers, as the older ones retire. Computers can do only so much.

COMPUTER INFO

■ A quote from Microsoft chairman Bill Gates' new book, *Business@the Speed of Thought*. "If the 1980s were about quality and the 1990s were about re-engineering, then the 2000s will be about velocity. About how quickly business itself will be transacted. About how information access will alter the lifestyle of consumers and their expectations of business."

Proceeds from the book will be used to fund a new international initiative called "Young Minds in Motion." This \$2 million program will fund community-based charitable organizations, worldwide, for projects that support the educational and skills development of disadvantaged children through innovative use of technology. <www.speed-of-thought.com>

■ **Microsoft has confirmed that its new Windows 2000 will definitely ship in February.** After more than three years of work and almost a billion dollars of research and development, Microsoft has finally "frozen" the code for their new computer operating system, Windows 2000. That means the alpha and beta tests are finally over, the major bugs have been located and fixed (hopefully), and manufacturing of CD-ROMs and manuals

has started. Microsoft says Win2K has 29 million lines of code.

■ **Smart programmers know that it often pays to let someone else look over their shoulder.** Another pair of eyes can instantly spot an error that a jaded programmer didn't notice after several hours. Teams of programmers for large companies often gather weekly to explain their latest code, step by step, for examination by other members. Far more "bugs" get caught this way, rather than finish a program and try to go back later to correct them. (Programmers find that writing program documentation during the programming process takes less time, and also helps point out software bugs they may have missed.) An hour of peer review beats day of debugging.

■ **Some software companies, as they build new headquarters, now take the time and trouble to construct private, individual offices --** with doors that close and walls that reach the ceiling -- because studies show that office workers and programmers are more productive in them than in cubicles

■ **Why not take advantage of a user's physical activity?** Compaq recently patented a technique that inductively charges a laptop computer's battery through its keyboard. The shaft of each key is surrounded by a coil of wire (an inductor), and each key shaft contains a tiny magnet. The physical motion of the keyswitch moving the magnet through the inductor creates an electric current, which can be collected and stored. The more you type, the more battery power you get. The total current generated this way may be negligible, but with laptop computers, some extra battery life is better than none.

INTERNET NEWS

■ **"Bricks-and-mortar" chains are increasingly forming partnerships with Internet companies to have an effective presence on the Web** where they believe their future lies.

Radio Shack and Best Buy stores have entered into long term joint venture marketing arrangements with Microsoft to sell their software and MSN Internet access. AOL also entered into a marketing pacts with Circuit City and Blockbuster video.

■ **A recent study shows that Washington, DC is the most Internet-**

friendly city in America. Over half of its population uses the Net at home, and/or at work. Other cities topping the 50% mark include San Francisco, CA; Salt Lake City, UT; Seattle, WA and Austin, TX.

■ **Walmart Stores, the world's largest retail firm, is teaming up with America Online** to form a new joint venture Internet access provider. Offered will be a customized version of AOL's *CompuServe* service.

Forty percent of Walmart's "100 million customers a week" currently do not have local access to the Internet and Walmart wants to expand the Web into smaller communities where it is currently not available. Walmart declined to say what the service would be called or how much it would cost. But it will not be free.

Launch is planned for Spring 2000. As part of the deal, AOL will promote Wal-Mart's newly revamped <www.Walmart.com> Website which debuted on January 1.

■ **Not to be outdone, Kmart Corp is forming its own totally free "Bluelight Special" Internet access company** by teaming up with Web portal, Yahoo!, Inc. Kmart said a survey shows that 30 percent of its customers are not using the Internet.

Kmart's new www.bluelight.com website allows you to download the free service directly from the Web, or you can save it on your hard drive or 4 floppies for later installation. While users will have access to the entire Web through Yahoo!, you can be assured that Kmart products will be featured.

■ **The Encyclopedia Britannica is now on the Internet** <www.britannica.com>, and the network designers expected so much traffic worldwide that they built five server locations in Great Britain, Virginia, Australia, Chicago and California. If traffic backs up in one area, the other servers can take up the slack.

■ **More isn't always necessarily better.** Ticketmaster has stopped offering a feature on their Internet Web site because it made things more complicated instead of simpler. Originally, while shopping for tickets, you could point and click to see how the stage or field of a stadium would look from a particular seat. The trouble was, though, that huge demand created such a bottleneck of data that it took too long for such views to be downloaded. Since Ticketmaster's Web site operated on

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #8

February 1, 2000

a first-come, first-served basis, it was too easy to lose the opportunity to buy a particular seat's ticket if you chose to see how another seat's view looked. The object was to sell tickets, not lose them. (Ticketmaster is one of the busiest Web sites in the world.)

■ **If you can't fight'em, join'em department.** As more shoppers head to the web ...rather than their local mall, they are being joined by shopping center operators. Clixnmortar.com merges cyber and retail space with such ideas as electronic gift registries, pre-shopping by PC at the local mall store and the elimination of waiting in a check-out line. Just check the inventory, buy online, pay by credit card and pick it at the store up all set to go.

■ **GMT (Greenwich Mean Time) has been joined by GNT (Greenwich Net Time).** It debuted on January 1, 2000 in Greenwich, U.K., home of the Prime Meridian. GNT supposedly is a worldwide time standard for the Internet. GNT will be used to "time stamp" documents and electronic signatures.

WASHINGTON WHISPERS

■ **Taxes on the Internet will play a major part in the upcoming presidential elections.** It has already started. Both Steve Forbes and Sen. John McCain want the current three year moratorium on Internet-based sales taxes to be made more or less permanent.

That puts Gov. George W. Bush in a sticky position since state and local governments almost without exception feel that sales made over the Web should be subject to sales taxes. And they are joined by Main Street merchants who charge unfair competition from Web merchants who can sell for less ...much less when you consider overhead savings and another 5 to 10 percent sales tax savings they can pass on to the customer.

At first Bush said he wanted to wait to see what the bipartisan commission on Internet taxation had to say. Their report is due next April. But that is not going over too well in anti-tax New Hampshire - scene of the nation's first primary.

Now it appears that all presidential candidates - both Republican and Democrat alike - will be taking a position that supports extending the ban for "several" years. But it is Congress - and not the president - that writes the laws.

■ **The FDA is cracking down on illegal drug sales over the Internet.** The Food and Drug Administration now has a staff of 50 devoted to monitoring online pharmacies. The agency is particularly targeting sites that sell drugs without a prescription and promote unapproved or counterfeit medicines. The FDA has unveiled a new online guide to assist web shoppers with buying prescription drugs or medical devices over the Internet.

Many of these questionable sites are located outside the U.S. ...beyond the reach of prosecution. Warning letters to online pharmacies based in foreign countries are also sent to their government. It is illegal for anyone, including a foreign pharmacy, to ship prescription drugs that do not meet FDA specs into the U.S. even though the drug may be legal to sell in that pharmacy's country.

The FDA site also has an email form that can be returned to tip the agency off to suspect Web sites.

■ **In an effort to protect America's computer systems from hackers and viruses,** President Clinton wants to establish a program, modeled after the military ROTC program, in which college students will receive education subsidies to develop "computer-security" (anti-hacking and computer mischief) skills if they agree to work for the government after graduation.

■ **Wanna buy an old UHF television channel?** Beginning May 10, 2000, the FCC will be auctioning off licenses for spectrum in the 700 MHz band formerly reserved for Television Channels 60 through 69. The auction will consist of 12 licenses, 2 in each of 6 Economic Area Groupings ("EAGs"). One 20 MHz license and one 10 MHz license is available in each EAG, with minimum opening bids of \$80 million and \$40 million respectively. The licenses to be auctioned may be used for a broad range of fixed and mobile wireless services such as high speed Internet access and 3G broadband wireless services, as well as new broadcasting services.

■ **Feds raid well known electronic kit distributor who suspect wireless microphone kits used for international espionage** - Ramsey Electronics, Inc., of Victor, NY was raided by armed agents of the U.S. Customs Service and New York State Troopers on November 10th. Victor, NY is located fairly close to the Canadian border where suspected terrorists have been nabbed.

Ramsey Electronics, a 25 year respected distributor of educational radio hobby kits is a long time advertiser in ham radio magazines and hamfest exhibitor ...including the Dayton HamVention.

The customs agents had a search warrant and were apparently looking for illegal spy devices ...or "Electronic Surreptitious Intercept Devices" as the law (Title 18 USC Section 2512) calls them.

According to a published report, two of the agents were recognized by a Ramsey technician as having visited their showroom the previous week posing as customers who wanted to know if some of the devices could be used to bug offices. The Tech said the devices were for hobbyists.

But apparently the agents were not convinced and returned later from their office in Buffalo, NY with the search warrant. John Ramsey was told that they were looking for wireless microphones that could be used as electronic "bugs."

One of the agents took five rolls of film photographing the Ramsey operation. Several hours after the raid began, the agents started loading Ramsey kits into a large van they backed up to the loading dock. Apparently the agents were looking for what they called "telephone bug kits" ...small FM transmitter kits that transmit in the middle of the FM broadcast band.

About \$30,000 in products were confiscated from Ramsey which the Customs Agents turned over to the U.S. Attorney in Buffalo. John Ramsey, the firm's president, said none of the merchandise taken by the federal government was designed or sold as "surreptitious surveillance equipment."

In fact, he said, most of it -- like a wireless microphone kit that sells for under \$6.00 -- was ill-suited for espionage. The U.S. Dept. of Justice is apparently re-interpreting federal wiretapping and smuggling laws to include small hobby radio transmitters.

According to another published report, the U.S. Customs Service has begun raiding small electronics dealers across the country in an effort to crack down on devices to tape, film or otherwise eavesdrop on people.

On November 10th, there were approximately 13 search warrants issued in New York City, Rochester, New York and Austin, Texas against companies believed to be in the business of selling electronic surreptitious intercept devices, in violation of federal law. Ramsey Electronics was one of those companies.

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #9

February 1, 2000

AMATEUR SERVICE CENSUS - INDIVIDUAL STATIONS - DECEMBER 31, 1999

| | <u>STATE</u> | <u>EXTRA</u> | <u>ADVANCED</u> | <u>GENERAL</u> | <u>TECHPLUS</u> | <u>TECHNICIAN</u> | <u>NOVICE</u> | <u>TOTAL</u> |
|----|--------------------------|--------------|-----------------|----------------|-----------------|-------------------|---------------|---------------|
| AK | Alaska | 348 | 465 | 537 | 526 | 1088 | 220 | 3184 |
| AL | Alabama | 1209 | 1557 | 1592 | 2007 | 3599 | 469 | 10433 |
| AR | Arkansas | 798 | 987 | 960 | 1231 | 2441 | 355 | 6772 |
| AZ | Arizona | 1685 | 2413 | 2405 | 2826 | 5231 | 711 | 15271 |
| CA | California | 8839 | 13663 | 13530 | 20055 | 37507 | 9827 | 103421 |
| CO | Colorado | 1357 | 2002 | 1873 | 2354 | 3636 | 721 | 11943 |
| CT | Connecticut | 1102 | 1333 | 1604 | 1622 | 1801 | 890 | 8352 |
| DC | Dist. Columbia | 64 | 83 | 103 | 56 | 75 | 35 | 416 |
| DE | Deleware | 202 | 207 | 255 | 294 | 336 | 97 | 1391 |
| FL | Florida | 4583 | 7085 | 8226 | 7449 | 8953 | 3616 | 39912 |
| GA | Georgia | 1665 | 2408 | 2342 | 2940 | 4247 | 826 | 14428 |
| HI | Hawaii | 374 | 447 | 484 | 586 | 1017 | 284 | 3192 |
| IA | Iowa | 768 | 1255 | 1223 | 1118 | 1591 | 508 | 6463 |
| ID | Idaho | 389 | 574 | 674 | 791 | 1636 | 210 | 4274 |
| IL | Illinois | 2651 | 3614 | 3908 | 4477 | 6167 | 1867 | 22684 |
| IN | Indiana | 1564 | 2169 | 2415 | 3198 | 4378 | 1088 | 14812 |
| KS | Kansas | 750 | 1055 | 1326 | 1431 | 2137 | 537 | 7236 |
| KY | Kentucky | 992 | 1140 | 1312 | 1705 | 2959 | 668 | 8776 |
| LA | Louisiana | 835 | 1171 | 1139 | 1284 | 1939 | 471 | 6839 |
| MA | Massachusetts | 2070 | 2287 | 2694 | 2910 | 3219 | 1298 | 14478 |
| MD | Maryland | 1518 | 2000 | 1897 | 2215 | 2725 | 824 | 11179 |
| ME | Maine | 541 | 651 | 885 | 821 | 1146 | 323 | 4367 |
| MI | Michigan | 2368 | 3238 | 3643 | 4130 | 6048 | 1322 | 20749 |
| MN | Minnesota | 1240 | 1817 | 1958 | 2019 | 2862 | 689 | 10585 |
| MO | Missouri | 1496 | 2004 | 2267 | 2293 | 3727 | 810 | 12597 |
| MS | Mississippi | 557 | 763 | 753 | 824 | 1489 | 257 | 4643 |
| MT | Montana | 326 | 454 | 511 | 542 | 1023 | 188 | 3044 |
| NC | North Carolina | 2103 | 2819 | 2859 | 3460 | 5561 | 1398 | 18200 |
| ND | North Dakota | 158 | 217 | 311 | 313 | 459 | 99 | 1557 |
| NE | Nebraska | 420 | 676 | 819 | 771 | 935 | 259 | 3880 |
| NH | New Hampshire | 719 | 707 | 834 | 1002 | 1326 | 353 | 4941 |
| NJ | New Jersey | 2144 | 2688 | 2824 | 3269 | 3382 | 1479 | 15786 |
| NM | New Mexico | 587 | 894 | 770 | 881 | 1908 | 194 | 5234 |
| NV | Nevada | 499 | 694 | 782 | 832 | 1481 | 215 | 4503 |
| NY | New York | 3789 | 4875 | 5552 | 6561 | 8555 | 3511 | 32843 |
| OH | Ohio | 3288 | 4403 | 4733 | 6845 | 8651 | 2194 | 30114 |
| OK | Oklahoma | 983 | 1327 | 1240 | 1684 | 3206 | 510 | 8950 |
| OR | Oregon | 1340 | 1984 | 2388 | 2546 | 3778 | 832 | 12868 |
| PA | Pennsylvania | 3160 | 3976 | 4462 | 4981 | 5747 | 1843 | 24169 |
| PR | Puerto Rico | 305 | 542 | 770 | 1892 | 1001 | 2338 | 6848 |
| RI | Rhode Island | 339 | 315 | 454 | 544 | 490 | 231 | 2373 |
| SC | South Carolina | 817 | 1059 | 1257 | 1318 | 1905 | 386 | 6742 |
| SD | South Dakota | 187 | 295 | 303 | 262 | 405 | 111 | 1563 |
| TN | Tennessee | 1641 | 2184 | 2096 | 2933 | 4154 | 754 | 13762 |
| TX | Texas | 5019 | 6978 | 6577 | 7786 | 12494 | 2171 | 41025 |
| UT | Utah | 531 | 784 | 724 | 1717 | 4277 | 363 | 8396 |
| VA | Virginia | 2196 | 2830 | 2751 | 3343 | 4549 | 1145 | 16814 |
| VI | Virgin Islands | 46 | 39 | 67 | 41 | 87 | 22 | 302 |
| VT | Vermont | 282 | 300 | 370 | 399 | 728 | 129 | 2208 |
| WA | Washington | 2515 | 3468 | 3896 | 4799 | 7651 | 1552 | 23881 |
| WI | Wisconsin | 1235 | 1705 | 1872 | 1884 | 3133 | 645 | 10474 |
| WV | West Virginia | 635 | 701 | 887 | 1184 | 2590 | 383 | 6380 |
| WY | Wyoming | 194 | 232 | 252 | 281 | 529 | 86 | 1574 |
| | Other: APO & Possessions | 193 | 150 | 188 | 252 | 686 | 78 | 1547 |
| | Total | 75616 | 103684 | 110554 | 133484 | 202645 | 52392 | 678375 |
| | % of total: | 11.15% | 15.28% | 16.30% | 19.68% | 29.87% | 7.72% | 100.00% |

W5YI REPORT

America's Oldest Ham Radio Newsletter

Page #10

February 1, 2000

UK HAM RADIO TO BE LINKED OVER THE INTERNET

In December, the *Radio Society of Great Britain* (RSGB) sent a letter to their *Radiocommunications Agency* (RA) concerning linking UK amateur radio to the Internet. The RA, the UK telecommunication regulatory agency within the Department of Trade, is responsible for managing non-military radio spectrum. Their Chief Executive is David Hendon. Here is the letter:

7 December 1999

Dear David,

The Society is now in a position to respond to your request for comments about the proposed linking of amateur radio and the Internet. The following sets out our thinking and a basis for going forward.

The Society recognizes that the Internet is an ever-growing influence on all our lives and as such inevitably has a part to play in the future of amateur radio. We believe that the time is right to take the next steps in establishing the role for the Internet in the development of amateur radio for the future.

We also recognize that there are some practical issues to be addressed if the essential essence of amateur radio is to be preserved, and it is not to be commoditised. Radio amateurs value the nature of their hobby and Internet linking needs to be embraced in full recognition of this. Additionally, some of the issues are related to the broader matter of linking of telecommunications networks more generally and therefore our longer term thinking must cover this aspect.

We see the question of Internet linking as developing over the next year or two. Our first steps should be limited, but be enough to represent an exciting development in our hobby. However, we believe that there needs to be safeguards to ensure that only amateur traffic is carried over amateur radio frequencies, and therefore believe that an important proviso must be that the use of the Internet should be to enable amateurs to extend the functionality of their communications links to other amateurs, and not to a broader population.

We believe that there are three areas where immediate progress should be made:

- Radio amateurs may use Internet linking to provide links in the packet radio network to other amateurs and amateur radio mailboxes. At this stage we do not support the linking of amateur radio to private e-mail facilities on the Internet.
- Radio amateurs may use Internet to control a remote amateur radio station (on any mode), subject to appropriate security to avoid unauthorized access to the station.
- Authorized repeaters in the 432 and 1296 MHz bands may be voice linked to the Internet to allow other licensed amateurs to access these repeaters. The Internet link would be managed by a control operator, operating under an NoV [Notice of Variation - similar to the FCC's *Special Temporary Authority*], who would control the Internet-linked radio and the RF link to the repeater. The control operator would take responsibility for addressing any abuse issues. Traffic of this nature would be subject to the agreement of the repeater keeper, and the necessary control operator NoV would be issued subject to this.

We foresee a review of the progress of this initiative in, say, six months to assess the issues which have arisen, and to determine what further liberalization of the facility might be ap-

propriate. Such liberalization could extend to further use of voice linking by 144 MHz repeaters and individual stations. The issues here are whether NoVs should in the future be needed for such linking where simplex stations are involved and how the matter of potential abuse is to be handled in the future.

The Society would set up a special task group to monitor and gather experiences from the early months of this experiment, to allow informed input to the decisions on the further extensions of the facilities.

I hope you feel our approach is helpful and constructive. In view of your wish to make quick progress on the matter, can I suggest that we discuss any issues that this letter gives rise to by 'phone, to allow your people to make speedy progress?

Yours sincerely,

Peter Kirby, General Manager, RSGB

After meeting with the RSGB and a number of interested individuals, the RA has now been agreed that a change can be made to the UK Amateur Radio regulations to permit connections of amateur radio to non-amateur networks. Special written permission is required. The initial phase of experimentation will allow for applications in the following areas:

1. Linking of repeaters to non-amateur networks

The RSGB's Repeater Management Committee will be responsible for the initial processing of applications. Applications must be made through repeater keepers who will be responsible for co-ordinating connections to their repeater so that maximum use can be made of this facility and to prevent unnecessary overlap. A repeater will be authorized one or two gateways with the repeaters call sign appended with /1, 2, 3, etc. The Licensee must operate the Gateway only on an attended basis and will be responsible for monitoring all traffic entering the Gateway to ensure that the content of messages to be transmitted are in accordance with the terms of the Amateur Radio license. A log must be kept showing the dates and times in UTC during which the Gateway is switched on and available for use.

2. Linking of Mailboxes

Existing SysOps will be able to apply for an extension to their Mailbox *Notice of Variation* to allow connection to non-amateur networks. The Licensee shall be permitted to connect the Mailbox Station to non-Amateur networks provided a word filter is employed to prevent inappropriate messages from entering the UK Digital Network.

3. Remote Control of Repeater

Applications may also be made for remote control of repeaters using non-amateur networks. These should be made to the RSGB's Repeater Management Committee.

The RA has asked for e-mailed comments on these first developments and on what further changes the Agency should consider in the next and later stages.